

Listing of the Claims:

The following Listing of the Claims will replace all prior versions and all prior listings of the claims in the present application:

1. (Presently Amended) A method for monitoring activity of one or more enzymes comprising the steps of:

A. mixing:

- (i) one or more tagged binding partner polypeptides;
- (ii) one or more binding partner polypeptides that correspond to said one or more tagged binding partner polypeptides of step (i); and
- (iii) one or more enzymes that add or remove a moiety to or from said one or more binding partner polypeptides or one or more tagged binding partner polypeptides;

C2 wherein said one or more tagged binding partner polypeptides or said one or more binding partner polypeptides comprise one or more sites for the addition or removal of said moiety, wherein addition or removal of said moiety promotes binding or dissociation of said one or more binding partner polypeptides with the corresponding one or more tagged binding partner polypeptides; under conditions which promote binding or dissociation of said one or more binding partner polypeptides with said one or more tagged binding partners; and

B. detecting said binding or dissociation, wherein the step of detecting binding comprises adding one or more detector molecules comprising a first region that associates with said one or more tagged binding partner polypeptides and a second region comprising one or more reporter molecules, wherein detection of binding or dissociation as a result of said mixing is indicative of enzyme activity.

2. (Original) The method of claim 1 wherein said one or more tagged binding partner polypeptides or said one or more binding partner polypeptides are immobilized on a solid support.

3. (Original) The method of claim 1 wherein both said one or more tagged binding partner polypeptides and said one or more binding partner polypeptides comprise one or more sites for the addition or removal of a moiety.
4. (Original) The method of claim 1 wherein said one or more tagged binding partner polypeptides are tagged with one or more fluorescent molecules.
5. (Original) The method of claim 4 wherein said detecting comprises monitoring the rate of diffusion of said fluorescent molecule.
6. (Cancelled)
7. (Presently Amended) The method of claim 6 1 wherein said one or more detector molecules comprise a said first region selected from the group consisting of a coiled-coil, an antigen, an epitope, an antibody, a single chain antibody, an oligonucleotide, avidin and its analogues and derivatives, and streptavidin, its analogs and derivatives; and wherein said one or more detector molecules comprise a said second region selected from the group consisting of an enzyme, a radioisotope, a radionuclide, a fluorochrome, and a fluorescent protein.
8. (Original) The method of claim 1 wherein one or more detector molecules are pre-bound to the one or more tagged binding partner polypeptides.
9. (Original) The method of claim 1 wherein the tag on said one or more tagged binding partner polypeptides comprises one or more radioactive molecules.
10. (Original) The method of claim 9 wherein said detecting comprises monitoring the presence or absence of radioactivity.
11. (Original) The method of claim 1 wherein said one or more binding partner polypeptides of step (ii) are tagged.
12. (Original) The method of claim 11 wherein the tag on said one or more binding partner polypeptides of step (ii) and said one or more tagged binding partner polypeptides comprises one or more fluorescent molecules.

13. (Original) The method of claim 12 wherein said detecting comprises monitoring the presence or absence of fluorescent resonance energy transfer (FRET).

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

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22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)


26. (Cancelled)

27. (Previously Amended) The method of claim 1 wherein said one or more sites comprise a sequence which directs modification by an enzyme selected from the group consisting of a kinase, a phosphatase, a UDP-N-acetylglucosamine-dolichyl-phosphate-N-acetylglucosamine phosphotransferase, an O-GlcNAc transferase, a glycylopeptide-N-tetradecanoyl transferase, a carbohydrate transferase, a ubiquitin activating enzyme E1, a ubiquitin conjugating enzyme E2, a ubiquitin conjugating enzyme Ubc9, a ubiquitin protein ligase E3, a poly (ADP-ribose) polymerase, a fatty acyl transferase, and an NAD:Arginine ADP ribosyltransferase.

28. (Original) The method of claim 1, wherein said site promotes addition of a chemical moiety selected from the group consisting of a phosphate moiety (PO_4), a ubiquitin moiety, a glycosyl moiety, an ADP-ribosyl moiety, a fatty acid moiety, and a sentrin moiety.
29. (Cancelled)
30. (Original) The method of claim 1, wherein said site promotes removal of a chemical moiety selected from the group consisting of a phosphate moiety (PO_4), a ubiquitin moiety, a glycosyl moiety, an ADP-ribosyl moiety, a fatty acid moiety, and a sentrin moiety.
31. (Cancelled)
32. (Previously Amended) The method of claim 1 wherein said tag on said one or more tagged binding partner polypeptides is selected from the group consisting of a coiled-coil, an antigen, an epitope, an antibody, a single chain antibody, a nucleic acid binding domain, a radioactive amino acid, a fluorescent molecule, a reporter enzyme, and biotin.
33. (Previously Amended) The method of claim 1 wherein said site is recombinant.
- C2 34. (Previously Amended) The method of claim 1 wherein said site is naturally occurring.
35. (Withdrawn)
36. (Withdrawn)
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- 47. (Withdrawn)
- 48. (Withdrawn)
- 49. (Withdrawn)
- 50. (Withdrawn)
- 51. (Presently Amended) A method of screening for a candidate modulator of enzymatic activity comprising:

A. mixing:

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- (i) one or more tagged binding partner polypeptides;
 - (ii) one or more binding partner polypeptides that correspond to said one or more tagged binding partner polypeptides of step (i); and
 - (iii) one or more enzymes that adds or removes a moiety to or from said binding partner polypeptide or said one or more tagged binding partner polypeptides;

wherein said one or more tagged binding partner polypeptides or said one or more binding partner polypeptides comprise one or more sites for the addition or removal of said moiety, wherein addition or removal of said moiety promotes binding or dissociation of said one or more binding partner polypeptides with the corresponding one or more tagged binding partner polypeptides; under conditions which promote binding or dissociation of said one or more binding partner polypeptides and said one or more tagged binding partner polypeptides; and

B. detecting binding or dissociation of said one or more binding partner polypeptides to said one or more tagged binding partner polypeptides in both the presence and absence of a candidate modulator of enzymatic activity, wherein the step of detecting binding comprises adding one or more detector molecules comprising a first region that associates with said one or more tagged binding partner polypeptides and a second region comprising one or more reporter molecules, wherein detection of the amount binding or dissociation in the presence of the candidate modulator that is lesser or greater as compared to the amount of binding or dissociation in the absence of the candidate modulator indicates modulation of enzymatic activity by said candidate modulator.

52. (Original) The method of claim 51 wherein said one or more tagged binding partner polypeptides or said one or more binding partner polypeptides are immobilized on a solid support.

53. (Cancelled)

54. (Cancelled)

55. (Withdrawn)

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